Owner's Manual

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NLR60
Laser Range Finder

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The compact and handy base model was specifically designed for indoor applications. Shortcut and Soft grip keys for addition, subtraction, area and volume calculation make measuring fast and very reliable.

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1.Safety Instruction

Permitted Use

- Measuring distances
- Computing functions, e. g. areas and volumes

Prohibited Use

- Using the instrument without instruction
- Using outside the stated limits
- Deactivation of safety systems and removal of explanatory and hazard labels
- Opening of the equipment by using tools (screwdrivers, etc.), as far as not specifically permitted for certain cases
- Carrying out modification or conversion of the product
- Use of accessories from other manufacturers without the express approval of NWi Technology.
- Deliberate or irresponsible behavior on scaffolding, when using ladders, when measuring near machines which are running, or near parts of machines or installations which are unprotected
- Aiming directly into the sun
- Inadequate safeguards at the surveying site (e.g. when measuring on roads, construction sites, etc.)

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Laser Classification

The NWi produces a visible laser beam which emerges from the front of the instrument.

Laser Class 2 products:

Do not stare into the laser beam or direct it towards other people unnecessarily. Protect eyes by turning them away from the beam.

⚠ **WARNING:**

Looking directly into the beam with optical aids
(e.g. binoculars, telescopes) can be hazardous.

Precautions:

Do not look directly into the beam with optical aids.

⚠ **CAUTION:**

Looking into the laser beam may be hazardous to the eyes.

Precautions:

Do not look into the laser beam. Make sure the laser is aimed above or below eye level.

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2.Start-Up

Inserting/Replacing Batteries (See "Figure A")

1) Remove battery compartment lid.
2) Insert batteries, observing correct polarity.
3) Close the battery compartment again.

- Replace the batteries when the symbol "⊐" flashes permanently in the display.
- Use alkaline batteries only.
- Remove the batteries before any long period of non-use to avoid the danger of corrosion

Figure A

Keypad (See "Figure B")

1- **ON/MEAS** button
2- **Area/Volume** button
3- **Indirect Measurement** button
4- **Single/Continuous Distance Measurement** button
5- **Plus (+)** button
6- **Minus (−)** button
7- **Storage** button
8- **Reference** button
9- **Illuminating/UNITS** button
10- **Clear/Off** button

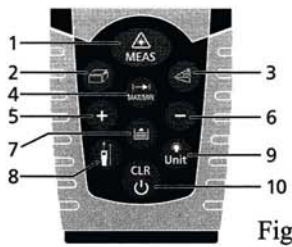

Figure B

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LCD Display (See "figure C")

1- Laser active
2- Reference level (front)
3- Reference level (rear)
4- Variable measuring functions
- Area measurement
- Volume measurement
- Indirect measurement
- Indirect (second) measurement

5- Single distance measurement
6- Battery status
7- Historical memory
8- Instrument error warning
9- Continuous measurement & Max and Min measurement
10- First value display line
11- Second value display line
12- Summary line for last measure or calculation result

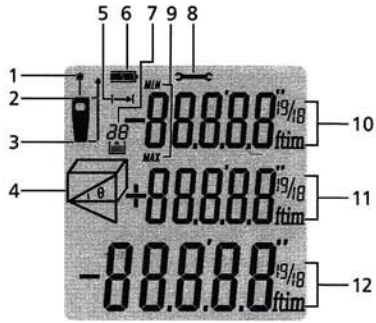

Figure C

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3.Initial Operation and Setting

Switching On and Off

MEAS Switches on the instrument and laser.

CLR Press this button longer to switch off the instrument.

The instrument switches off automatically after three minutes of inactivity.

Clear Button

CLR The last action is cancelled or the data display is cleared. If in the mode of History storage, press Storage button and Clear button simultaneously will clear all storage data in the memory.

Reference Level Setting (See "Figure D")

The default reference setting is from the rear of the instrument. Press this button to take the measurement from the front edge, A special beep sounds whenever the reference setting is changed. After a re-startup the reference returns automatically to the default setting (rear reference).

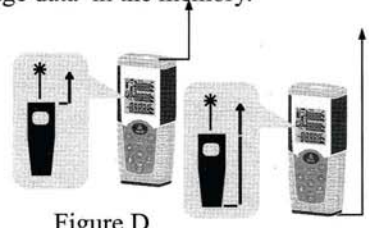

Figure D

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Display Illumination

Unit Quickly pushing and releasing the Illumination/Unit button will turn the LCD Backlight on or off.

Distance Unit Setting For Instrument

Unit Pressing and holding the Illumination/Unit key for a longer period of time will change the measurement values from the displayed measurement unit to in, ft, ft and in or m.

Clicking the Unit button after taking a measurement will automatically convert the last measured value to the other available measurement units

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4.Measuring

Single Distance Measurement

MEAS Press to activate the laser.

Press again to trigger the distance measurement. The measured value is displayed immediately.

Continuous Measurement (Tracking) & Max and Min Measurement (See "Figure E")

The continuous measurement function (tracking) is used for the transferring of measurements, e.g., from construction plans. In continuous measurement mode, the measuring tool can be moved to the target, whereby the measured value is updated approx. every 0.5 seconds in the third line. The corresponding minimum and maximum values are displayed dynamically in the first and second line. As an example, the user can move from a wall to the required distance, while the actual distance can be read continuously. For continuous measurement, push button MAX/MIN until the indicator for continuous measurement appears in the display. And press MEAS or Clear button again to stop the function. The function is terminated automatically after continuous 100 times measurement.

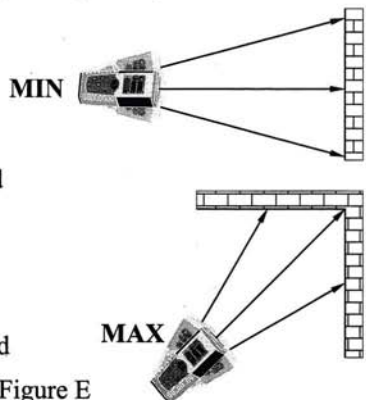

Figure E

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5.Functions

Addition / Subtraction

Distance measuring.

- The next measurement is added to the previous one.
- The next measurement is subtracted from the previous one.
- The last step is cancelled.
- Return to the single distance measurement

Area Measurement

- Press the Area/Volume button. The ▱ symbol appears in the display.

Press MEAS button to take the first length measurement (e.g. length).

Press MEAS again to take the second length measurement (e.g. width).

The result of the area measurement is displayed in the third line, the individually measured values are displayed in lines 1 and 2.

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Volume Measurement

For volume measurements, push Area/Volume button, twice until the indicator for volume measurement appears in the display. Afterwards,

press to take first distance measurement (e.g. length)

press to take second distance measurement(e.g. width)

The result of the area measurement from the values already measured is displayed in the summary line.

Press to take the third distance measurement(e.g. height). The value is displayed in the second line.

The result of the area measurement is displayed in the third line, the two previously measured values in lines 1 and 2.

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Indirect Measurement

Indirect measurement - determining a distance using 2 auxiliary measurements. (See "Figure G").
e.g. when measuring heights that require the measurement of two or three measurements as following step:
Press this button once, the display shows. The distance to be measured flashes in the symbol.
MEAS Aim at the upper point (1) and trigger the measurement.
After the first measurement the value is adopted. Keep the instrument as horizontal as possible.
MEAS Press to measure the distance of the horizontal point (2).
The result of the function is displayed in the summary line.

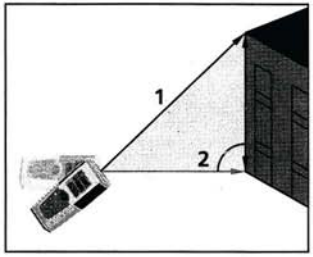

Figure G

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Indirect Measurement - Determining a Distance Using 3 Measurements (See"Figure H")

Press this button twice; the display shows the symbol. The distance to be measured flashes in the symbol.

MEAS Aim at the lower point (1) and trigger the measurement. After the first measurement, the value is stored. Keep the instrument as horizontal as possible.

MEAS Press to measure the distance result of the horizontal point (2).

MEAS Press to measure the distance result of the upper point (3).

The result of the function is displayed in the summary line.

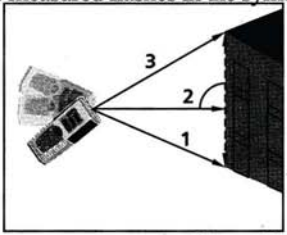

Figure H

Historical Storage

the previous 20 records (measurements or calculated results) are shown in the reverse order. Use the + or − buttons to navigate through these records.

You can clear all records by pressing Storage button and Clear button simultaneously in historical storage mode.

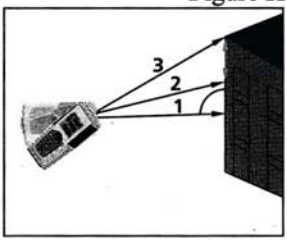

Figure I

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6.Technical Data

Technical Specifications	Model: NLR60
Range	0.05 to 50 m*(0.16 ft to 164 ft*)
Measuring accuracy up to 10m (2σ, standard deviation)	Typically: ±1.5 mm** (± 0.06 in**)
Measuring units	m,in,ft
Laser Class	Class II
Laser Type	635 nm, <1mW
Area, Volume Calculations	•
Indirect measurement using Pythagoras	•
Addition/Subtraction	•
Continuous Measurement	•
Min/Max Distance Tracking	•
Display illumination and multi-line display	•
Beep indication	•
Dust Protect/Splash proof	IP 54
History measurement records	20

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Keyboard Type	Super Soft-Touch (Long life)
Operating Temperature	0°C to 40°C(32°F to 104°F)
Storage Temperature	-10°C to 60°C(14°F to 140°F)
Battery Life	up to 4,000 measurements
Batteries	Type AAA 2 x 1.5V
Auto. laser switch-off	after 0.5 min
Auto instrument switch-off	after 3 min
Dimension	115 x 48 x 28 mm
Weight	135g

* Use a target plate to increase the measurement range during daylight or if the target has poor reflection properties!
** in favorable conditions (good target surface properties, room temperature) up to 10 m (33 ft). In unfavorable conditions, such as intense sunshine, poorly reflecting target surface or high temperature variations, the deviation over distances above 10 m (33 ft) can increase by ± 0.15 mm/m (± 0.0018 in/ft).

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7.Troubleshooting – Causes and Corrective Measures

Code	Cause	Corrective measure
204	Calculation error	Repeat procedure
208	Received signal too weak, measurement time too long. Distance >50m	Use target plate
209	Received signal too strong	Target too reflective(use target plate)
252	Temperature too high	Cool down instrument
253	Temperature too low	Warm up instrument
255	Hardware error	Switch the device on/off several times, If the symbol still appears, please contact your dealer for assistance.

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8.Measuring Conditions

Measuring Range

The range is limited to 50m.

At night or dusk and if the target is in shadow the measuring range without target plate is increased. Use a target plate to increase the measurement range during daylight or if the target has poor reflection properties.

Target Surfaces

Measuring errors can occur when measuring toward colorless liquids (e.g. water) or dust free glass, Styrofoam or similar semi-permeable surfaces. Aiming at high gloss surfaces may deflect the laser beam and lead to measurement errors.

The measuring time may increase against non-reflective and dark surfaces.

Care

Do not immerse the instrument in water. Wipe off dirt with a damp, soft cloth. Do not use aggressive cleaning agents or solutions. Handle the instrument as you would a telescope or camera.

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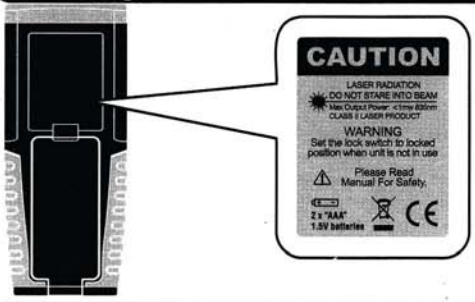
9.Labelling


CAUTION
LASER RADIATION
DO NOT STARE INTO BEAM
Max.Output Power: <1mw 630nm
CLASS II LASER PRODUCT
WARNING
Set the lock switch to locked position when unit is not in use
Please Read Manual For Safety.
2 x "AAA" 1.5V batteries

10.Standard Warranty Terms

The warranty period for the NLR60 Laser Range Finder is 12 months from the date of purchase. Northwest Instrument, Inc. (Seller) warrants this instrument made by Northwest Instrument to be free from manufacturing defects in materials and workmanship. For claims to be made under this warranty the instrument must be inspected by Northwest and the defect must be proven to Seller's satisfaction. At the time that it is proven to the Seller's satisfaction that the instrument is defective, it shall be repaired or replaced, at the Seller's option and returned to the original purchaser at no cost to them, including

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transportation charges. Seller's sole obligation and the Buyer's sole remedy are limited strictly to repair or replacement with these provisions below:

A. The instrument is returned to Northwest, properly packaged with the transportation charges prepaid and insured and accompanied by proof of ownership. Receipt and previous registration is required.

B. Except for ordinary wear and tear resulting from normal usage, the instrument, upon inspection by the Seller is determined to be defective in material and/or workmanship.
Under no circumstances shall the Seller be liable for any consequential, incidental or contingent damages whatsoever.

Limitations and Exclusions

A. This warranty does not apply to instruments subject to negligence, abuse, accident, improper operation, instruments damaged in transit or damage due to unauthorized service repairs made by someone other than Northwest or any other Northwest authorized service personnel. Circumstances beyond Northwest Instrument's control cannot be warranted.

B.This warranty does not apply to regular required maintenance such as cleaning, adjusting, lubricating or calibrating unless required as a result of a defect in workmanship or materials.If, upon examination of The instrument, the Seller determines that additional repair services are required and not covered under this warranty, the Seller shall notify the Buyer of such repair charges and proceed only after authorization has been received.

C. This warranty does not apply to instruments damaged in transit to or from Northwest Instrument or any authorized repair center. Other remedies may or may not be available for transportation damages.

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